
पोटैशियम शूनाइट — विशिष्टि
(पहला पुनरीक्षण)

Potassium Schoenite —
Specification
(First Revision)

ICS 65.080

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Soil Quality and Fertilizers Sectional Committee had been approved by the Food and Agriculture Division Council.

Potassium schoenite is a double salt having the composition $K_2SO_4 \cdot MgSO_4 \cdot 6H_2O$. It is manufactured from salt bitterns.

This standard was first published in 1972. The present revision is undertaken to align the standard with the requirements of *Fertilizer (Control) Order (FCO)*, 1985. The following changes have been effected in this revision:

- i) Limit for Magnesium oxide has been modified
- ii) Requirement for total chlorides has been deleted
- iii) Limit for Sodium chloride has been prescribed.
- iv) Minimum requirement for Sodium has been added.

In the formulation of this standard, due consideration has been given to the provisions of the *Fertilizer (Control) Order*, 1985, the *Essential Commodities Act*, 1955 and the *Legal Metrology (Packaged Commodities) Rules*, 2011. However, this standard is subject to the restrictions imposed under them, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

POTASSIUM SCHOENITE — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of tests for potassium schoenite used as a fertilizer.

2 REFERENCES

The following standards contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title	IS No.	Title
		(Part 4) : 1985	Determination of Potassium (<i>first revision</i>)
		(Part 5) : 1985	Determination of Secondary elements and micronutrients (<i>first revision</i>)
		(Part 6) : 1985	Determination of Moisture and impurities (<i>first revision</i>)
		7406 (Part1) : 1984	Specification for Jute Bags for packing Fertilizers Part1 Laminated Bags manufactured from 407g/m ² : 85 × 39 Tarpaulin fabric (<i>first revision</i>)
		9755 : 2016	High Density Polyethylene (HDPE)/Polypropylene (PP) woven sacks for packing fertilizers — Specification (<i>first revision</i>)
460	Test Sieves		
(Part 1) : 2020	Wire Cloth Test Sieves (<i>fourth revision</i>)		
(Part 2) : 2020	Perforated Plate Test Sieves (<i>fourth revision</i>)		
(Part 3) : 2020	Methods of examination of apertures of test sieves (<i>fourth revision</i>)		
1070 : 1992	Reagent Grade Water (<i>third revision</i>)		
6092	Method of sampling and test for fertilizers		
(Part 1) : 1985	Sampling (<i>first revision</i>)		

3 REQUIREMENTS

3.1 Description

The material shall be crystalline, white or light grey in colour, and shall be free from visible contamination with clay and grit.

3.2 The material shall also comply with the requirements given in Table 1 when tested in according with the methods prescribed in column 4.

Table 1 Requirements for Potassium Schoenite
(Clause 3.2)

SI No.	Characteristic	Requirement	Methods of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by weight, <i>Max</i> ¹⁾	1.5	Annex A
ii)	Potash content (as K ₂ O), percent by weight, <i>Min</i> ²⁾	23.0	5 of IS 6092 (Part 4)
iii)	Magnesium oxide (as MgO), percent by weight (on dry basis), <i>Max</i>	11.0	Annex B
iv)	Sodium (as NaCl), percent by weight (on dry basis), <i>Max</i>	2.0	5.8 of IS 6092 (Part 6)

¹⁾ A tolerance of 0.3 units of moisture content shall be permissible.

²⁾ A tolerance of 0.2 units of nutrient shall be permissible.

4 PACKING AND MARKING

4.1 Packing

The material shall be packed in Laminated Jute bags conforming to IS 7406 (Part 1) or high density polyethylene (HDPE)/Polypropylene (PP) woven sacks conforming to IS 9755, in quantities as stipulated in *Essential Commodities Act*, 1955 and the *Legal Metrology (Packaged Commodities) Rules*, 2011 and in accordance with *Fertilizer (Control) Order*, 1985.

4.2 Marking

The containers shall be securely closed and marked with the following:

- a) Name of manufacturer/Pool handling agency/Importer (where a manufacturer is also pool handling agency, word 'P' and as the case may be, if an importer the word 'I' shall be written against the name of such manufacturer, if the bag contains imported fertilizer);
- b) Trade mark and/or Brand name, if any;
- c) Name of the fertilizer (in case of imported fertilizer, the word 'Imported' shall be super scribed);
- d) Percent nutrient as K_2O and sulphur to be denoted by the letters 'K' and 'S', respectively;

- e) Gross and net quantity in kilogram;
- f) Batch number;
- g) Maximum retail price inclusive of all taxes;
- h) Month and year of manufacture/import (in case of imported fertilizer); and
- j) Any other information required under the *Fertilizer (Control) Order*, 1985 and the *Legal Metrology (Packaged Commodities) Rules*, 2011.

4.2.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark

5 SAMPLING

5.1 The method of drawing representative samples of the material shall be as prescribed in IS 6092 (Part 1).

ANNEX A

(Clause 3.2 and Table 1)

DETERMINATION OF MOISTURE

A-1 PROCEDURE

A-1.1 Weigh accurately about 10 g of the material in a Petri dish and dry in an oven at 50 ± 2 °C to constant mass.

A-2 CALCULATION

A-2.1 Moisture, percent by mass = $\frac{100 \times M_1}{M_2}$

where

M_1 = loss in mass in g of the material on drying, and

M_2 = mass in g of the material taken for the test.

ANNEX B

(Clause 3.2 and Table 1)

METHODS OF TEST FOR MAGNESIUM OXIDE

B-1 QUALITY OF REAGENTS

B-1.1 Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

B-2 PREPARATION OF SAMPLE

B-2.1 Crush 50 g of the material to pass through 500 micron IS Sieve. Dry to constant mass as in **A-1.1** to obtain the *prepared sample* and keep in a clean glass stoppered weighing bottle in a desiccator for subsequent tests.

B-3 DETERMINATION OF MAGNESIUM OXIDE

B-3.1 Principle of Method — Magnesium is determined complexometrically using EDTA.

B-3.2 Reagents

B-3.2.1 Dilute Hydrochloric Acid — approximately 5 N.

B-3.2.2 Standard Calcium Solution — Weigh 1 000 g of calcium carbonate, dried previously at 120 °C, and dissolve in the minimum quantity of dilute hydrochloric acid. Dilute the solution to one litre in a volumetric flask. One milliliter of this solution is equivalent to 0.243 2 mg of magnesium.

B-3.2.3 Ammonium Chloride — *Ammonium Hydroxide Buffer Solution* - Dissolve 67.5 g of ammonium chloride in a mixture of 570 ml of ammonium hydroxide

(sp gr 0.90) and 250 ml of water. Dissolve separately a mixture of 0.931 g of disodium ethylenediamine tetra-acetate dehydrate (EDTA) and 0.616 g of magnesium sulphate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$) in about 50 ml of water. Mix the two solutions and dilute to one litre.

B-3.2.4 Eriochrome Black T Indicator Solution — Dissolve 0.1 g of eriochrome black T in 20 ml of methanol. This solution shall be used for not more than a week.

B-3.2.5 Standard Disodium Ethylenediamine Tetraacetate (EDTA) Solution — Weigh 3.72 g of disodium ethylenediamine tetra-acetate dehydrate in water and dilute in a volumetric flask to one litre. The solution shall be standardized frequently against standard calcium solution following the procedure given in **B-3.3**.

B-3.3 Procedure

B-3.3.1 Sample Solution — Weigh accurately about 10 g of the *prepared sample*, dissolve in water and dilute to 100 ml in a volumetric flask with water. This solution (*sample solution*) shall be used for determination of magnesium (**B-3.3.2**).

B-3.3.2 Dilute 10 ml of sample solution (B-3.3.1) with water to one litre in a volumetric flask. Transfer 100 ml of the solution into a conical flask, add 5 ml of ammonium chloride - ammonium hydroxide buffer solution, 5 drops of eriochrome black T indicator solution and titrate against standard EDTA solution to a pure blue end point. Note the volume of the standard EDTA solution used in the titration.

B-3.4 Calculation

Magnesium oxide (as MgO),

$$\text{Percent by mass} = \frac{100 \times 165.8 \, VN}{W}$$

where

V = volume in ml of standard EDTA solution used in titration

N = magnesium equivalent in g per millilitre of standard EDTA solution, and

W = mass in g of the *prepared sample* taken for the test in **B-3.3.1**.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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